

THE LARVA AND NYMPH INSTARS OF *ODONTACARUS (LEOGONIUS) ADELAIDEAE* (WOMERSLEY) (ACARINA: TROMBICULIDAE: LEEUWENHOEKIINAE)

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Summary

SOUTHCOTT, R. V. (1989) The larva and nymph instars of *Odontacarus (Leogonius) adelaideae* (Womersley) (Acarina: Trombiculidae: Leeuwenhoekiiinae). *Trans. R. Soc. S. Aust.* 113(00), 35-45, 31 May, 1989.

The larva of *Odontacarus (Leogonius) adelaideae* (Womersley, 1944) is redescribed, and a lectotype designated. Larvae have been collected repeatedly on domestic cats in suburban Adelaide, South Australia, and reared experimentally to protonymphs and deutonymphs. The larva, protonymph and deutonymph are described. Experimental transfer of larvae from cats to man is described. A key is given to the known deutonymphs of *Leogonius*, and revisional notes on the classification of the larvae.

KEY WORDS: Taxonomy, *Odontacarus*, *Leogonius*, South Australia, larva, protonymph, deutonymph, rearing, cat.

Introduction

Womersley (1944) described *Leeuwenhoekia adelaideae* from several larval trombiculid mites, collected from domestic cats in southern suburbs of Adelaide in 1931 and 1941, and three collected from rats, in Cairns, Queensland, in 1939. He had earlier (Womersley 1934) referred to some of the same (1931) larvae as "*Leuwenhoekia* (sic) *australiense* (sic) Hirst 1929" (sic), i.e. as *Leeuwenhoekia australiensis* Hirst, 1925, originally described from larvae collected at Ashfield, Sydney, New South Wales, but subsequently recorded more widely in Australia and the south-west Pacific area (Günther 1952; Wharton & Fuller 1952).

Following revisions of the taxonomy of the leeuwenhoekiiine larval mites, those known from Australia, New Guinea and south-east Asia (previously referred to *Leeuwenhoekia* Oudemans, 1911 and *Acomatacarus* Ewing, 1942) are referred to *Odontacarus* Ewing, 1929, subgenus *Leogonius* Vercammen-Grandjean, 1968 (see Southcott 1986a).

In the present paper the larva of *Odontacarus adelaideae* is redescribed. The first attempt to rear larvae was in 1941, but the protonymphs and deutonymphs described below were not obtained until 1950-1952.

A key is given for deutonymphs of *Leogonius*. The successful transfers of partly-fed larvae from cats to feeding on man is described.

Materials and Methods

Slide-mounted mites in the South Australian Museum Adelaide (SAM) referred to *O. adelaideae* and collected by D. C. Swan in 1931 and R. V. Southcott in 1941 were examined. They were originally mounted in gum-chloral media, but

showed evidence of extensive remounting to gum-chloral or polyvinyl alcohol-based media, with associated damage. Some specimens labelled as *adelaideae* from N.S.W. were excluded. The specimens recorded by Womersley (1944) from Cairns, Qld, 1939 were not located.

Further larvae were collected topotypically in 1941 and between 1946-1952 from the ears of domestic cats. Some were mounted in water-soluble media (generally gum-chloral based), whilst attempts were made to rear others to later instars.

In 1941 larvae freshly collected from cats were confined under a watch-glass attached to my forearm with adhesive strapping. Although the mites re-attached and increased in size, no successful transformation occurred.

Mites were again collected from the ears of domestic cats from the same site, during summer-autumn of 1946-1952, and placed on strips of damp blotting paper in sealed tubes at ambient temperatures. In one case a nearly-intact protonymph was obtained. In several cases transformation to deutonymph occurred. All specimens were then preserved in lactic acid, or dry, until studied, generally 35-40 years later. The deutonymphs and residual pieces of larval or protonymphal pelts were slide-mounted, through lactic acid to Hoyer's gum chloral medium (Baker & Wharton 1952).

Microscopy was by a Leitz Ortholux microscope with phase-contrast and polarizing facilities; its camera lucida was used to make the line drawings.

Terminology and abbreviations are as in Southcott (1986a,b). All measurements are in μm unless otherwise stated. Prefixes: ACB to author's registration numbers, N to those of SAM.

Odontacarus Ewing

Odontacarus Ewing, 1929, p. 188

(for synonymy see Southcott, 1986a, p. 171, and contained references).

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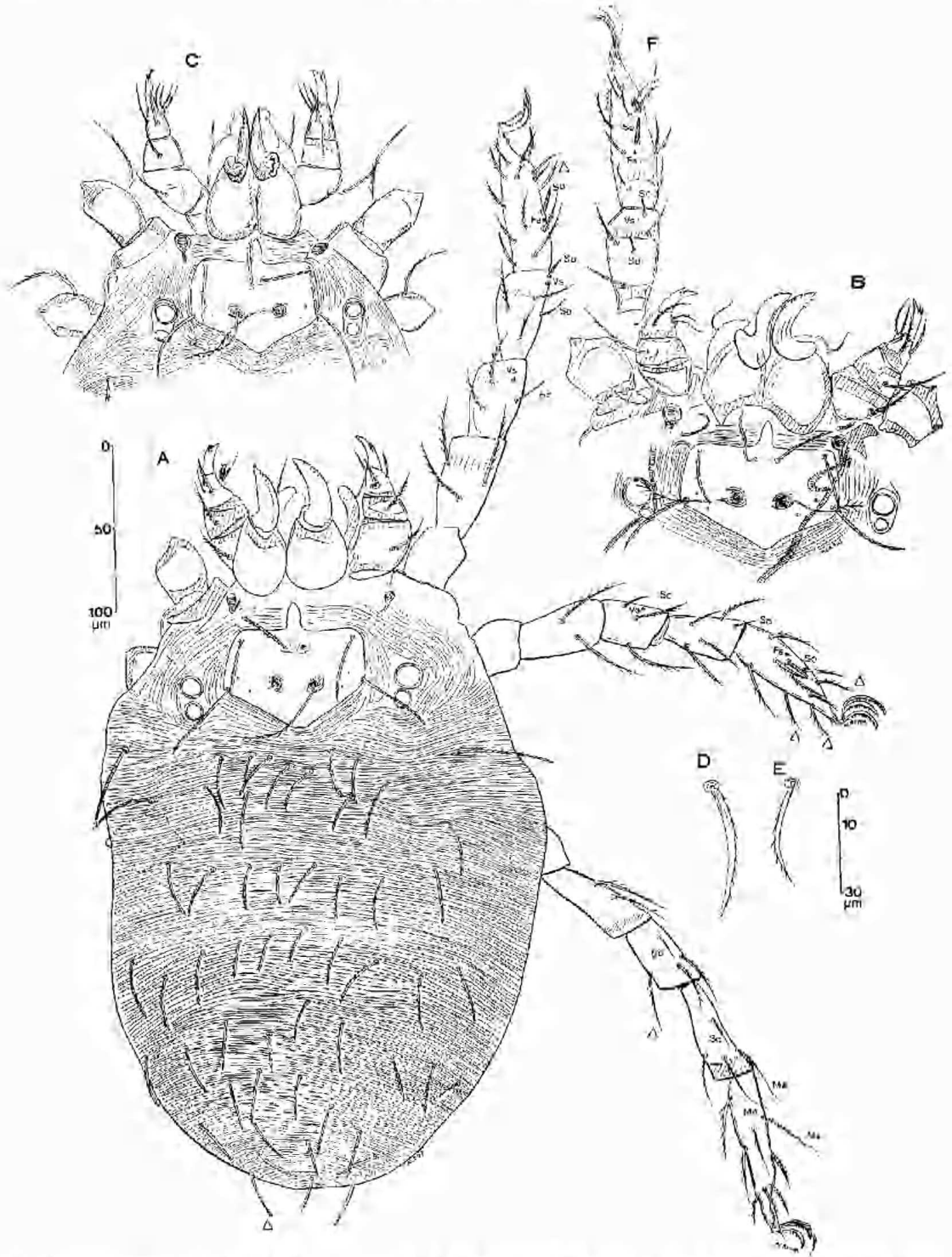


Fig. 1 *Odontacarus adelaideae* (Womersley), larva. A Dorsal view of lectotype, legs on left omitted beyond trochanters; legs on right completed from specimens in same postures as lectotype, leg I from specimen ACB520BA2, leg II from ACB270A, leg III from ACB270B. B Gnathosoma, dorsal suture and adjacent structures from paralectotype N1988333 (ACB941). C Same for specimen ACB520BA2. D. Dorsal idiosomal seta. E. Ventral idiosomal seta. F Tibia I and tarsus I, dorsal aspect, of paralectotype N1988333. (D, E to scale on right; other figures to scale on left).

Definition of larva: Trombidioidea (as defined by Southcott 1987) with anterior median dorsal scutum, with nasus, two anteromedian setae, two anterolateral setae, two posterolateral setae, and two sensilla, each with non-expanded sensillary seta. Leg segmental formula 6, 6, 6. Eyes 2 + 2, sessile.

Definition of deutonymph and adult: Trombidioidea with anterior median crista, expanded anteriorly to a blunt arrow-head-like shape (sagitta), bearing two normal setae, with two sensilla towards its posterior end, each bearing a slender, setulose sensillary seta. Leg segmental formula 7, 7, 7. Deutonymph with two pairs of suckers (acetabula) along each lateral genital valve, adult with three pairs. Dorsal idiosomal setae not leaf-like, nor divided, but may be present in two distinct forms. Eyes absent.

Type species: *Trombicula dentata* Ewing, 1925, p. 257.

Subgenus *Leogonius* Vercammen-Grandjean, 1968. Definition of larva: as in Gill (1979, p. 143).

Type species: *Leeuwenhoekia australiensis* Hirst, 1925, p. 150.

Odontacarus adelaidae (Womersley)

FIGS 1A-E, 2-6

Leeuwenhoekia (sic) *australiense*: (sic) Womersley, 1934, p. 217 (partim).

Leeuwenhoekia australiense: (sic) Womersley, 1937, p. 82 (partim).

Leeuwenhoekia australiensis: Womersley & Heaslip, 1943, p. 141 (partim); Thor & Willmann, 1947, p. 323 (partim).

Leeuwenhoekia adelaidae Womersley, 1944, p. 105; Gill, Moule & Riek, 1945, p. 29; Gill & Parrish, 1945, Plate 3; Taylor, 1946, p. 228.

Acomatacarus adelaidae: Womersley, 1945, pp. 98, 111; Southcott, 1957, p. 149.

Acomatacarus (*Acomatacarus*) *adelaidae*: Wharton & Fuller, 1952, p. 97.

Odontacarus adelaidae: Southcott, 1973, pp. 46, 103; 1976, p. 139; 1978, p. 16 (unnamed); Lee & Southcott, 1979, p. 35; 1980, p. 7.

Odontacarus (*Leogonius*) *adelaidae*: Southcott, 1986a, p. 180.

Description of larva: *Lectotype:* Colour in life orange red. Length of idiosoma (mounted on slide) 370, width 285; total length from tip of cheliceral fangs to posterior pole of idiosoma 463.

Dorsal scutum wider than long (nasus included); nasus well developed, tongue-like, slightly pointed anteriorly, slightly waisted, meeting body of scutum at approximately right angles; anterolateral angles slightly obtuse, rounded; lateral borders slightly convex; posterolateral angles obtuse, rounded;

posterolateral borders sinuous; posterior angle obtuse, rounded. Scutalae narrow, tapering, slightly blunted at tip, with pointed, outstanding setules. Sensillary setae with 8-10 setules in distal half. Sensillary sockets level with PL scutalae bases and set slightly obliquely. Shield lightly porose, with two larger pits near each PL angle.

Standard and other data of scutum and legs of the type series as in Table 1.

Eyes oval, conjoined, posterolateral to dorsal scutum; anterior eye with maximum diameter 16, posterior 11.

Dorsal idiosomal setae normal, lightly tapering, slightly blunted at tip, moderately setulose, arranged 2 ("humeral"), then 6, then in vague rows across dorsum; total about 55.

Ventral surface of idiosoma with a pair of pointed, setulose setae, 33 long, with centres of bases 34 apart, between coxae III. Behind coxae III opisthosoma with 42 setae, curved, setulose, pointed, but the more posterior setae longer, slightly blunted, resembling posterior dorsal idiosomal setae. Anus 24 long by 13 across; 16 setae anterior to level of middle of anus, and 26 posterior. Urstigma well chitinized, oval, 25 long by 16 wide.

Coxalae 2, 1, 1, long, well setulose, tapering, pointed. Lateral coxala I 64 long, medial coxala I 68, coxala II 53, coxala III 46.

Dorsal tracheal opening present between posterolateral edge of gnathosoma and anterior border of coxa I (or overlying latter).

Dorsal tracheal opening present between posterolateral edge of gnathosoma and anterior border of coxa I (or overlying latter).

Gnathosoma normal. Combined chelicerae bases c. 73 across, by 91 long from tip of cheliceral fangs to posterior edge of cheliceral bases. Fangs stout, curved, blunt-pointed, with 3-5 strong retrorse teeth along concave (flexor, dorsal) edge, and 5-7 blunted denticles along convex (extensor, ventral) edge. Galeala 26 long, simple.

Palpi normal, palpal setal formula B, B, BNN, So + 7B. Palpal tibial claw three-pronged. No supracoxala to gnathosoma or legs.

Description of legs of larva (from ACB520BA2 and ACB270A,B): Leg lengths (including coxae and claws): I 425, II 355, III 425. Scobalar formulae: trochanters 1, 1, 1; femora 6, 5, 4; genua 4, 4, 4; tibiae 8, 6, 6 (including 2 mastalae on tibia III); tarsi 26, 16, 13 (including one mastala on III). Leg specialized setae as follows: Leg I (from ACB520BA2): SoGel.38ad(21 long), VsGel.66pd(4), SoGel.71pd(22), SoTil.59d(16), VsTil.88d(2), SoTil.95ad(10) (i.e. slightly distal to Vs). Leg II (from ACB270A): SoGel.134pd(20), VsGel.164pd(4), SoTil.42pd(16), SoTil.89pd(10). Leg III (from ACB270B): SoGel.126pd(21), SoTil.50pd(27).

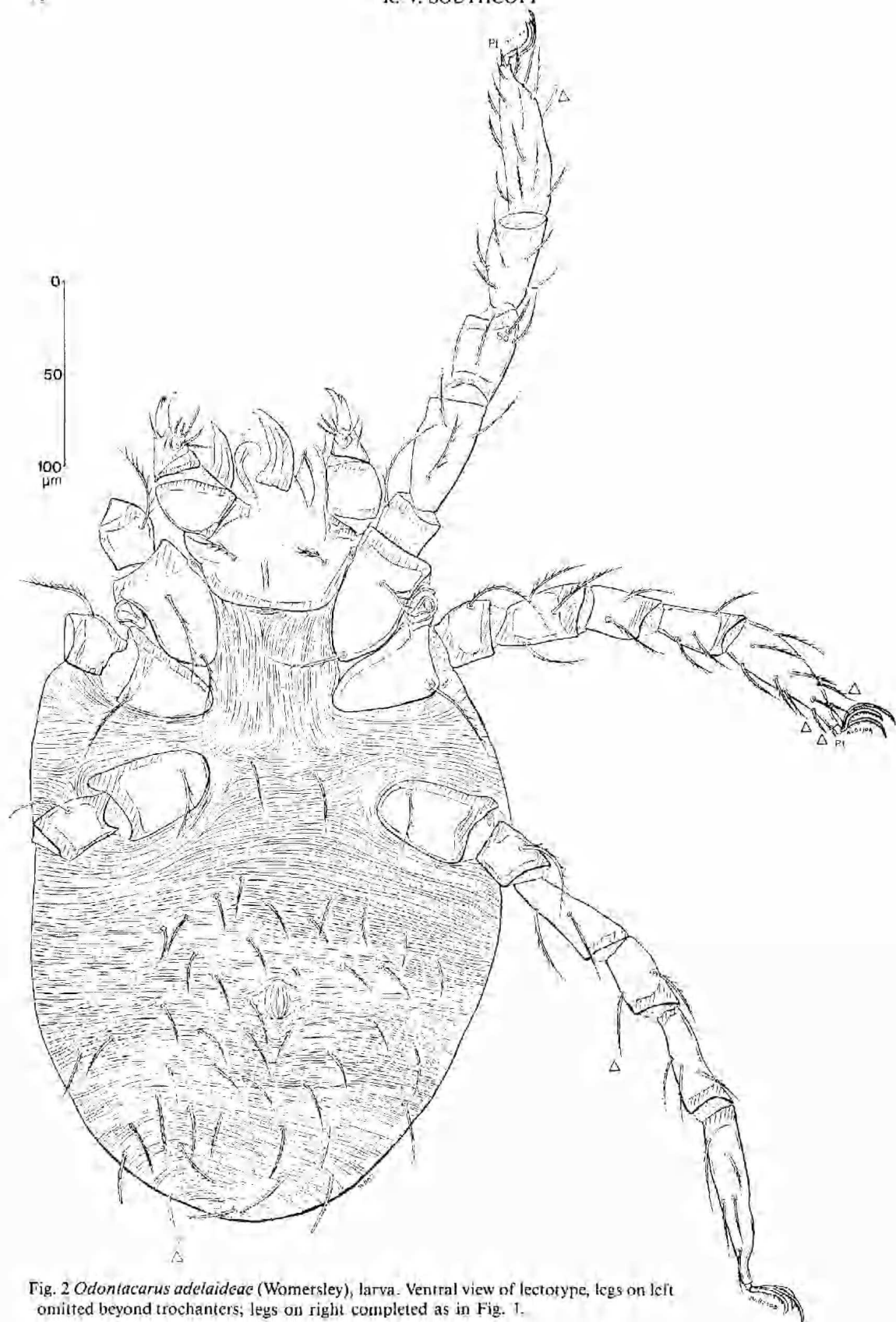


Fig. 2 *Odontacarus adelaideae* (Womersley), larva. Ventral view of lectotype, legs on left omitted beyond trochanters; legs on right completed as in Fig. 1.

TABLE 1. Metric data for type series of *Odontacarus adelaideae* (Womersley) larvae

Character	N1988331 (ACB67) Lectotype	n	mean	s.d.	Observed range
AW	66	5	70.80	±3.56	(66-74)
PW	84	5	87.80	±2.77	(84-91)
SB	24	5	28.20	±3.03	(24-32)
ASB	50	5	51.00	±1.73	(50-54)
PSB	28	5	29.80	±1.79	(28-32)
L	78	5	80.80	±3.35	(78-86)
LA	16	5	16.80	±1.10	(16-18)
LB	62	5	64.00	±2.83	(62-68)
LN	27	5	25.40	±2.30	(22-28)
W	96	5	95.60	±0.55	(95-96)
AP	28	5	30.40	±1.82	(28-32)
AM	36	5	37.20	±1.64	(36-40)
AL	36	5	35.80	±0.45	(35-36)
PL	49	4	53.25	±5.44	(49-61)
PL/AL	1.36	4	1.478	±0.15	(1.36-1.69)
AMB	11	5	10.60	±1.67	(9-13)
Sens	55	3	53.67	±3.21	(50-56)
PW/LB	1.35	5	1.374	±0.08	(1.28-1.47)
DS	28-55	4	55.50 ²	±1.00	(55-57) ²
Hum ¹	55	4	55.50 ²	±1.00	(55-57) ²
MDS	28-31	5	32.80 ²	±1.30	(31-34) ²
PDS	34-39	5	40.60 ²	±3.13	(38-46) ²
GeI	57	4	56.75	±1.26	(55-58)
TiI	60	3	62.00	±2.00	(60-64)
TaI(L)	94	2	95.50	±2.12	(94-97)
TaI(H)	27	2	29.00	±2.83	(27-31)
GeII	44	5	47.40	±2.30	(44-50)
TiII	50	5	54.00	±2.35	(50-56)
TaII(L)	78	5	84.00	±3.46	(78-86)
TaII(H)	27	5	27.00	±0.71	(26-28)
GeIII	51	2	53.00	±2.83	(51-55)
TiIII	68	2	70.50	±3.54	(68-73)
TaIII(L)	95	2	101.50	±9.19	(95-108)
TaIII(H)	24	2	23.00	±1.41	(22-24)
AW/AP	2.36	5	2.334	±0.14	(2.13-2.52)
AW/TiIII	0.97	2	0.985	±0.02	(0.97-1.00)
PW/TiIII	1.24	2	1.215	±0.04	(1.19-1.24)
PSB/SB	1.17	5	1.066	±0.12	(0.93-1.19)

¹ Humeral seta length² For maximum values

Both tarsi I and II bear a large central dorsal solenoidala: SoTaI.43d(15) and FaTaI.40ad(3) (from ACB270A); on tarsus II (from ACB270B) is SoTaII.40d(15), and FaTaII.37ad(4) (i.e. slightly proximal and anterior to SoTaII (in usual convention of legs being considered stretched out horizontally at right angles to main longitudinal axis of mite). Pretarsal formula 1, 1, 0. Tarsal claws normal, slender, falciform, simple, neomedian longer than anterior and posterior, each with a fringe of minute onychotrichs.

Description of Protonymph: (Fig. 3) from mounted specimen ACB522BA5) Colour in life not observed, presumably orange-red. Shape irregularly spheroidal, 630 long, maximum width 430. Skin without setae, thin, more or less smooth but with many minor creases, possibly artefacts of mounting.

Developing limbs represented by finger-like processes; those of chelicerae and palpi still adnate to main mass of protonymph, those of legs becoming free.

A few setae and a few fragments of larval tracheae adhering to protonymphal skin.

Description of Deutonymph: (Figs 4-6) (from slide-mounted specimen ACB522AA/D1, supplemented by other specimens) Colour in life orange. Idiosoma ovoid, more pointed anteriorly and posteriorly, not waisted, flattened below; no division between propodosoma and metapodosoma. Propodosoma more or less conical; posterior pole of idiosoma rounded. Length of idiosoma (from tip of sagitta) 512, width 370; over-all length from chelicerae tips to posterior pole of idiosoma 634.

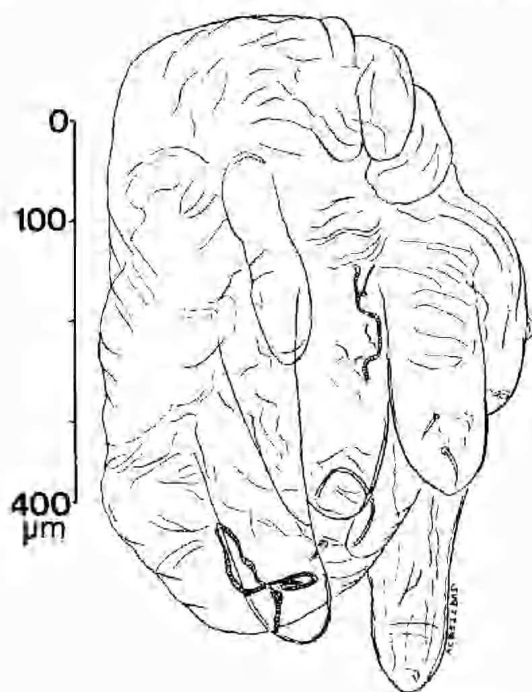


Fig. 3 *Odontacarus adelaideae* (Womersley). Protonymph, entire, specimen ACB522BAS.

Propodosoma bearing dorsally a short crista 151 long, with sagitta about 15 across, carrying two almost nude pointed setae 41 long. Sensillary area 46 across, with two large sensilla, each with a filiform sensillary seta 100 long, with faint setules in distal half. Crista produced posteriorad beyond sensilla, tapering to a blunt point 47 behind level of sensillary centres.

Crista surrounded by normal setae similar to those of whole of dorsum of idiosoma. Dorsal idiosomal setae unexpanded, pointed, lightly setulose, curved, 18–46 long, the posterior setae the longer. There is no clear separation into morphologically different types of setae in any area of the dorsum.

Ventral surface of idiosoma thickly covered with pointed, setulose setae, 15–34 long; setules more prominent than for dorsal setae; setae less setulose but longer towards posterior pole, where they are similar to the posterior dorsal idiosomalae.

Genital aperture 86 long, by 50 wide; valves lightly chitinized; each medial valve with two or three setae 13–18 long at about mid-area, slender and less setulose than surrounding setae. Anus 49 long by 31 wide, with 2 or 3 curved setulose setae along each lateral valve, similar to surrounding setae.

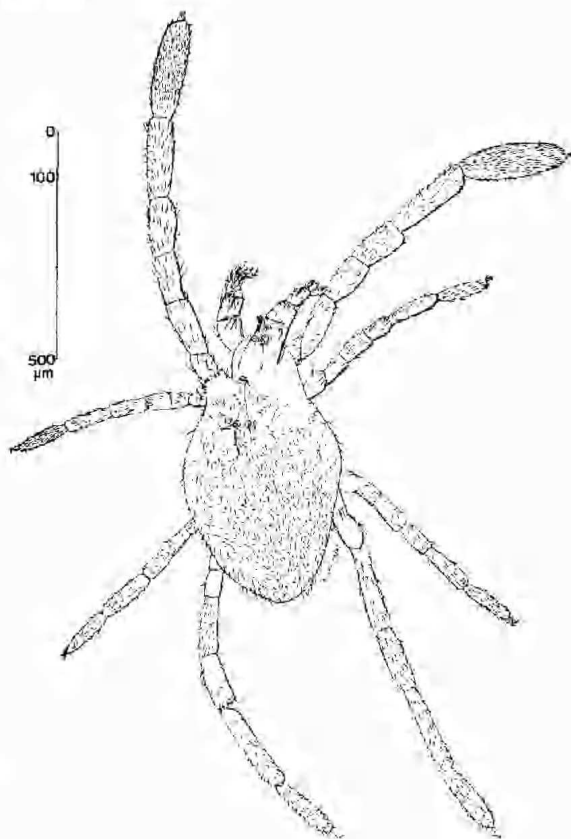


Fig. 4 *Odontacarus adelaideae* (Womersley). Deutonymph, entire, dorsal aspect, specimen ACB521AA/D1.

Legs long, fairly thin; femoral to tibial segments more or less cylindrical. Lengths (including coxae and claws) I 960, II 570, III 595, IV 925. Leg scabulae pointed, setulose; interspersed among them are many pointed sensory setae (spinalae). A small vestigial, 5–6 long, present on each of tibia I and genua I and II, distally and dorsolaterally. Tarsus I outline and elongate oval, other tarsi more cylindrical (see fig. 4).

Other morphometric data as in Table 2.

Palpi normal, with generally lightly setulose setae (many appearing almost nude), but along dorsal (extensor) edges of segments a number of unilaterally setulose setae (pectinalae). Palpal tibial claw stout, blunted, with four accessory thickened setae on dorso-medial aspect. Palpal tarsus clavate, ovoid, with several setulose setae, but carrying also a cluster of terminal smooth sensory setae.

Cheliceral fangs fairly robust, curved, blunt-pointed, with a row of about 10 minute denticles along flexor (concave) edge.



Fig. 5 *Odontacarus adelaidae* (Womersley). Deutonymph: gnathosoma and adjacent structures, dorsal aspect (partly in transparency), from specimen ACB521AA/D1.

TABLE 2. *Morphometric data for deutonymphs of Odontacarus adelaideae (Womersley).*

Character	Specimen ACB522AA/D1	n	mean	s.d.	Observed range
CL ¹	104	8	115.38	±12.71	(95–135)
SB	25	9	26.56	± 3.61	(20–31)
PDS	33–46	9	47.78	± 3.83 ²	(44–56) ²
Gel	135	9	141.11	±14.00	(118–160)
Til	187	9	206.11	±20.33	(178–226)
Tal(L) ³	244	9	246.67	±18.26	(218–273)
Tal(H)	67	9	68.56	± 4.45	(60–75)
GelI	75	8	79.63	± 5.58	(72–86)
TilI	110	9	113.00	±10.51	(96–128)
TalI(L) ³	124	9	12.78	±13.27	(11–148)
TalI(H)	29	9	30.00	± 3.43	(24–35)
GelII	77	7	86.86	± 8.11	(77–100)
TilII	118	8	129.88	±13.66	(111–146)
TalII(L) ³	117	8	127.38	±11.33	(114–143)
TalII(H)	31	8	29.38	± 3.78	(25–34)
GelIV	146	8	154.50	±11.65	(137–172)
TilIV	198	8	219.63	±24.23	(188–253)
TalIV(L) ³	175	8	182.00	±14.79	(162–205)
TalIV(H)	36	8	34.50	± 4.17	(29–41)
Tal(L)/Til	1.30	9	1.23	± 0.056	(1.15–1.30)

¹ CL = cristal length, measured from anterior lip of sagitta to level of midpoints of sensillary sockets

² For maximum values

³ Omitting claws and pedicle.

Identification of larvae of *Odontacarus (Leogonius)* in Australia Comments

The recording of about 42 ventral opisthosomal setae in *O. adelaideae* larva invalidates caption number 12 of my earlier key to the larvae (Southcott 1986a pp. 179–180), which was based largely on previously published descriptions.

Accordingly, captions 12–14 should be replaced by the following:

- 12 More than 45 ventral opisthosomal setae present 13
 Less than 45 (about 42) ventral opisthosomal setae present. AL scutalae in range 33–40 µm long. PDS 34–46 µm long. *O. adelaideae* (Womersley)
 13 More than 75 dorsal idiosomal setae present,
O. australiensis (Hirst) (including *O. hirsti* (Womersley, 1944)²)
 Less than 70 dorsal idiosomal setae present. 14
 14 PL/AL <1.20 *O. novaguinea* (Womersley, 1944)³ (including *O. longipes* (Womersley, 1945)³)
 PL/AL >1.20 15

Key to deutonymph instars of *Leogonius* (Australia-SW Pacific area)

- 1 Dorsal idiosomalae arising from small platelets and about 25 µm long¹
 *O. novaguinea* (Womersley, 1944).
 Dorsal idiosomalae without the above combination of characters 2
 2 Posterior dorsal idiosomalae over 50 µm long. Tal/Til mean 1.54 (tarsus I 210–228 µm long, tibia I 130–154 µm)² *O. australiensis* (Hirst, 1925)
 (syn. *O. hirsti* (Womersley, 1944)^{2,3})
 Posterior dorsal idiosomalae generally less than 50 µm long 3
 3 Tarsus I longer than 300 µm (tarsus I 450 µm, tibia I 450 µm, Tal/Til = 1.00, dorsal idiosomalae to 30 µm long)¹ *O. longipes* (Womersley, 1945)
 Tarsus I less than 300 µm long 4
 4 Posterior dorsal idiosomalae 15–20 µm long. Tal/Til 1.36 (tarsus I 185 µm long, tibia I 136 µm)⁴
 *O. audyi* (Radford, 1946)
 Posterior dorsal idiosomalae generally to about 45 µm long. Tal(L)/Til 1.15–1.30 (tarsus I 218–273 µm long, tibia I 178–226 µm) *O. adelaideae* (Womersley, 1944)

¹ From Goff (1079).

² Synonymized by Domrow (1956) and Goff (1979).

³ These two species (as larvae) were synonymized by Goff (1979). However, see the comment of Southcott (1986a, p. 191).

⁴ Womersley (1945)

² Domrow (1956)

³ Goff (1979)

⁴ Nadchatram (1963)

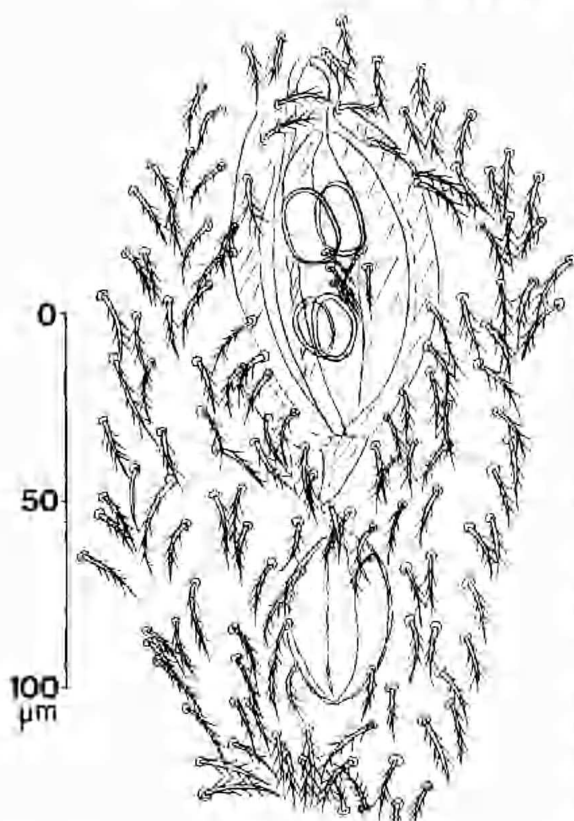


Fig. 6 *Odontacarus adalaidae* (Womersley). Deutonymph, external genitalia and anus, from specimen ACB521AA/DI.

Material examined of *Odontacarus adalaidae*: Type series: South Australia: Glen Osmond, Nov. 1931, D. C. Swan, from ears of cat, 3 paralectotypes (N1988333–N1988335, ACB941–943). Unley Park (not Unley, as stated by Womersley 1944), 1.ii.1941, R. V. Southcott, from ears of cat, one lectotype (N1988331, ACB67), one paralectotype (N1988332, ACB66).

The lectotype was designated as N1988331 because it has not been remounted since 1943 (indicated by my notes) and is, therefore, the most intact. Also it is in the same attitude as Womersley's (1944) figure.

I have excluded from the type series the three specimens recorded in the original description, from "Cairns, Queensland, 1939 W. G. H." [easlip], "from rats," as they can no longer be found in the collection of the South Australian Museum, and were presumably excluded by Womersley at some time after his 1944 paper. He did not refer to them in 1945, in his last publication on *Odontacarus*. Other material: S. Aust. Unley Park (all from ears of cats of toposype area, collected R.V.S.) 1.ii.1941,

one specimen, ACB68; 9.ii.1941, several specimens, ACB72, 74, 928; 1.iii.1941, 3, ACB75–77; 11.iii.1941, 2, ACB 78, 79; 15.iii.1941, 2, ACB80, 81; 29.iii.1941, 1, ACB82; 30.iii.1941, 1, ACB83; 4.iv.1941, 1, ACB84; 6.iv.1941, 1, ACB85; 11.iv.1941, 3, ACB86 B,C,E; 14.iv.1941, 1, ACB87; 16.xi.1941, 3, ACB100–102; 23.xi.1941, 5, ACB103; 29.xi.1941, 5, ACB104; 22.xii.1946, several, ACB270; 16.xii.1947, several, ACB319; 31.xii.1950, several, ACB520; 31.xii.1950, two batches of several larvae, from which deutonymphs were reared, ACB521, 522; 25.ii.1951, several, ACB523; 1.iii.1951, several, ACB524; 9.iii.1951, 2, ACB525; 6.i.1952, several, ACB560 (deutonymphs reared).

Successful larva to nymph rearing experiments

Larvae were handled in the 1950–1952 series of experiments as stated above. One protonymph (ACB522BA5) was obtained, but the transformation was not observed, and discovered only when the tube was examined on 29.i.1951. Earlier examination on 14.i.1951 revealed nothing unusual (however in these wet tube studies observation is at times difficult).

Eleven deutonymphs were obtained from the 1950–1952 experiments. Nine of these came from experiments ACB521 and 522, with larvae collected on 31.xii.1950, and nymphs having emerged over 15–29.i.1951. With batch ACB560, collected on 6.i.1952, two newly emerged deutonymphs were found on 27.ii.1952.

The finding of an intact protonymph was fortunate, as this instar is generally unrecognizable after the emergence of the deutonymphs.

From the above experiments, the larva to deutonymph transformations took 15–29 days. Domrow (1956) recorded that in *O. australiensis* deutonymphs took 25–28 days to emerge in his laboratory in Brisbane.

Transfer of larvae of *O. adalaidae* from cats to man

On the afternoon of 11 April 1941 I transferred seven attached larvae (batch ACB86) from the ears of a cat to the skin of the dorsum of my forearm, under a watchglass kept in place by sticking plaster. On removing the watchglass 2.5 hr later I found two small larvae attached to my skin. Removal of the watchglass periodically was necessary, as condensation made detailed observations impossible.

Next morning the underlying skin was sore. Three maculopapules with attached mites were observed at different sites; these maculopapules were 4–6 mm wide, and were itchy. That afternoon the area of erythema around the attachment sites had grown to 10–11 mm wide, these had become conjoined (only two mites were now attached). Small white specks were seen at the summits of the papules (four beneath one mite, three beneath the other).

presumably mite faeces. Small vesicles were present at the summit of each papule at the mite attachment sites (20–22 hours after initial attachments (codes as S + 20–22 hr)).

The itching, redness and vesiculation increased. The attached mites increased slowly in size to "half-grown". At S + 39 hr the whole area under the watchglass was itching, diffusely swollen and somewhat indurated; this area was 45 mm across, and by this stage the mites were considered full grown (as compared with the larvae that had been observed on the cat's ears). The papules had become so prominent as to press upon the covering watchglass. The mites continued to make small faecal pellets beneath them.

By S + c. 90 hr two vesicles had broken and were oozing serum. No lymphangitis or lymphadenopathy had developed.

After the mites had detached the swelling reduced rapidly, and scabs developed over the broken skin surfaces.

By S + 8 days the papules had retrogressed to being almost flat, and the erythema was fading. No general symptoms attributable to the mite bitings or their lesions developed.

Unfortunately, this attempt to obtain mite deutonymphs by human feedings was unsuccessful. A summarized account of this experiment was recorded earlier (Southcott, 1973).

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